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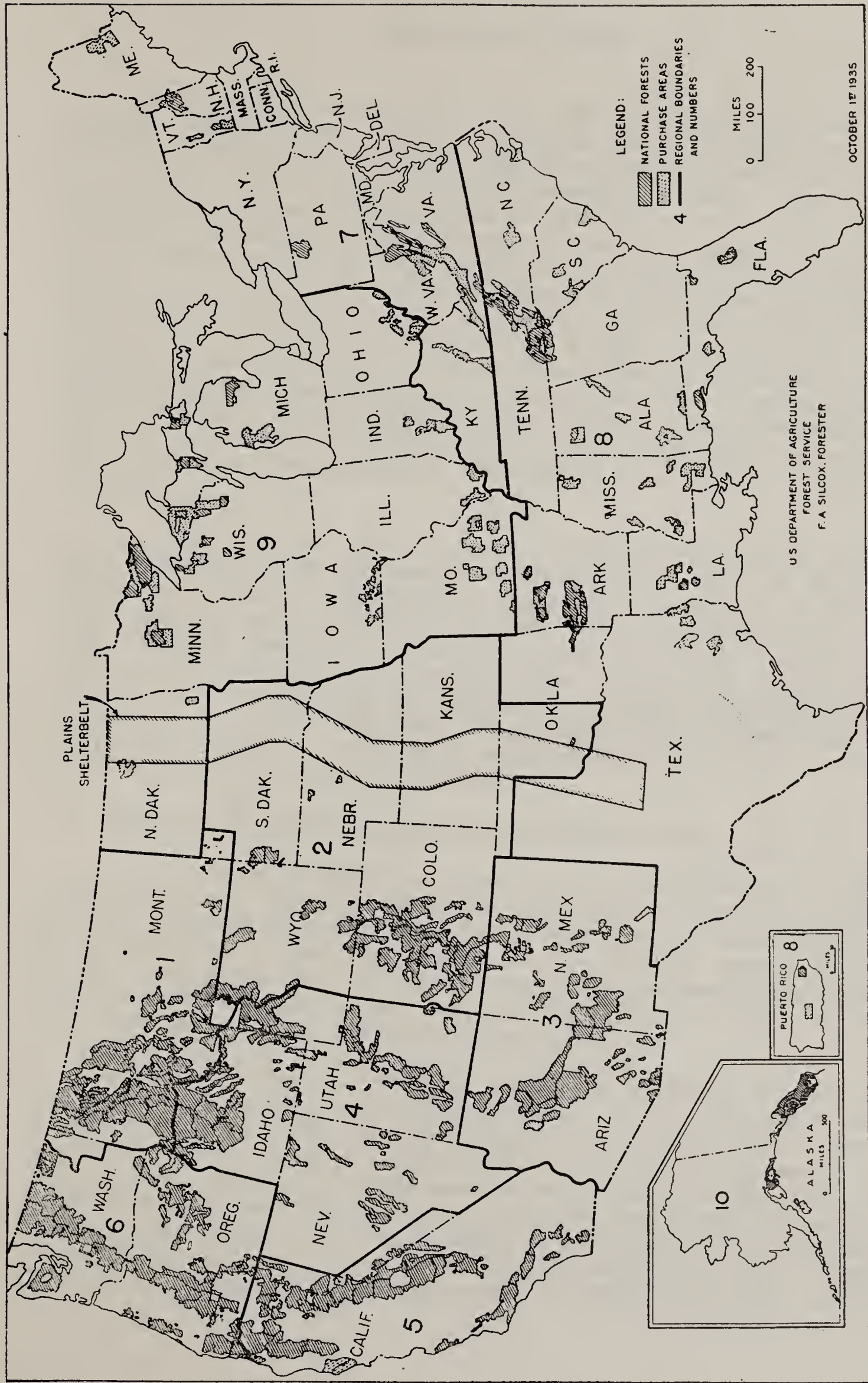
WORK OF THE
U. S. FOREST SERVICE

Forestry has to do with the perpetuation and development of forests because of their many benefits to mankind - in providing wood and other forest products for man's use; in preventing erosion of soil and in regulating stream flow and water supply for irrigation, for power, and for domestic use; in harboring wild life; in giving abundant opportunity for outdoor recreation and for healthful employment.

When forestry is practiced, timber becomes a crop produced from the soil under methods which must be developed scientifically, as other branches of agriculture are developed. In most countries where forestry is an important governmental activity it is grouped with agriculture. Right handling of the forest ranges is a problem of animal husbandry and forage-plant production. Water conservation has in view the interests of irrigation farmers. Forestry and agriculture are interwoven and akin.

The Forest Service is a bureau of the Department of Agriculture. Besides administering the National Forests, the Forest Service also cooperates with State departments in forestry practices, and makes investigations in the interest of the best use of the forests and forest products of the country generally.

SEP 4 1946



NATIONAL FORESTS AND PURCHASE AREAS

THE UNIVERSITY OF CHICAGO



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THE NATIONAL FORESTS

The National Forests are for the most part located in the mountainous regions of the country, where the preservation of tree growth is of great importance in conserving water supplies and in preventing or retarding soil erosion and rapid run-off of waters. From the hardwoods of the southern Appalachians to the spruces of the White Mountains in New England, from the Pinon and juniper stands where tree growth begins in the southern Rockies of New Mexico to the pine and fir forests of the Canadian line in Montana and Idaho, from the brush-covered foothills of the San Jacinto and San Bernardino Mountains in southern California to the vast conifer stands of the Olympics and Cascades in northern Washington, the National Forests lie mainly on the mountain slopes. Even along the Alaskan shore, where the Tongass and Chugach National Forests form a ribbon 600 miles long from the southern tip of the Territory to within sight of Mount McKinley, the valuable Sitka spruce and hemlock growth clothes the lower flanks of the coastal mountains.

The timber, water, grazing, recreational opportunities, and other resources of the National Forests are for the use of the people. The National Forests contribute to industrial enterprises through their yearly cut of over a billion board feet of timber; they protect watersheds of about one-third of the water-power resources of the country and help to insure pure and abundant water supplies to hundreds of towns and cities; they furnish pasturage for about 13 million head of livestock of all ages; and they afford playgrounds for millions of recreation seekers, to whom these vacation places are made accessible by the building of roads and trails.

Creation of National Forests from Public Domain in the West

A little more than 40 years ago the forests on the public domain seemed in a fair way to be destroyed eventually by fire and reckless cutting. Nothing was being done to protect them, or even to use them in the right way. They were simply left to burn, or else to pass by means of one or another of the land laws into the hands of private owners whose interest in most cases impelled them to take from the land what they could get easily and move on.

Congress, therefore, in 1891, authorized the President to set aside forest reserves, as National Forests were for some years called, in order to protect the remaining timber on the public domain from destruction and to insure a regular flow of water in the streams. The first forest reserve - the Yellowstone Park Timberland Reserve - was created by President Harrison that same year, and later Presidents have created others, until at present there are about 150 National Forests with a total net area of over 163,000,000 acres. Within the forest boundaries are nearly 25,000,000 acres in private ownership, consisting

of lands granted or taken up for one purpose or another before the Forests were created or of homesteads and mining claims patented since. In addition to the established National Forests, there are a number of areas, including several million acres of forest land in several states, in process of acquisition by purchase, which will be administered as National Forests when acquired by the Government.

The original act made no provision for administering the forests and the withdrawal of land involved from all forms of settlement met with vigorous disapproval, especially in the West, where most of the reserves were situated. These defects, however, were largely removed by Congress on June 4, 1897, in a law outlining a system of organization and management for the reserves and placing their administration under the Secretary of the Interior. The American National-Forest system really dates from the passage of that Act.

Government administration of the reserves soon made apparent the necessity for scientific forestry to make their use general. It was the duty of the Secretary of the Interior to prescribe regulations which would insure the fulfillment of the objects aimed at in creating the reserves. Timber cutting must provide for the growing of a new timber crop. Unrestricted grazing had seriously injured the range; it was necessary to devise methods for increasing the forage crop. Both timber use and grazing use must be so managed that watersheds would be adequately protected. All the resources of the forests needed to be given careful consideration and plans devised for their best development. Without such plans little of the value of the forests to the public could be secured. Technical problems were involved which the officials of the Interior Department felt to be outside their province. They therefore at first requested the aid of the experts of the Department of Agriculture as advisors and soon recommended the transfer of administration of the reserves to the latter department.

This transfer took place in 1905. In 1907 the name "forest reserves" was changed to "national forests," by act of Congress, to indicate that their resources are not locked up as "reserves" for a distant future. National Forests are under government management for the purpose of securing sound development of large areas of timberland in the best interests of all, which experience has shown can not be equally attained under the unstable tenure and necessity for quick liquidation involved in private ownership.

Purchase of National Forests

By the time the National-Forest movement began, virtually all except some inferior remnants of the public domain within the states east of the Great Plains had passed to state or private ownership. Indeed, in some of the thirteen original states there had never been any public domain. The poor lands remaining in federal control were inadequate to meet public needs. The purchase of additional lands valu-

able for the protection of the headwaters of navigable streams or for timber production, and their reorganization as National Forests were therefore authorized by Congress, first by the act of March 1, 1911, called the Weeks law, and later by the amendatory act of June 7, 1924, known as the Clarke-McNary law. The Fulmer law, approved by the President on August 29, 1935, authorized cooperation with the several states for the purpose of stimulating the acquisition, development, and proper administration and management of state forests and of coordinating federal and state activities in carrying out a national program of forest-land management. This purchase work is conducted by the National Forest Reservation Commission, which consists of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, two members of the Senate, and two members of the House of Representatives.

As the Government obtains title the forests are put under systematic management with the object of improving their regulative effect upon streamflow and of increasing the supply of forest products. Work also is undertaken for the development of wildlife resources and of recreational facilities. Although much of the land had been depleted by destructive logging and fires before it was acquired, under the practice of forestry the stands of timber are increasing at the same time that the protective value of the cover as a regulator of stream flow is materially improved.

An immense impetus was given the development of the national-forest system, especially in the eastern half of the United States, by purchases of land under the emergency relief programs. More than \$45,000,000 of emergency funds were allotted for land purchase during the years 1933 to 1935, and these purchases have opened up large reservoirs of work for the relief of the unemployed.

The National Forests for Use

The policy under which the National Forests are administered by the Department of Agriculture through the Forest Service was laid down by the Secretary of Agriculture in a letter to the Chief Forester, dated February 1, 1905, in which he said:

"In the administration of the forest reserves it must be clearly borne in mind that all land is to be devoted to its most productive use for the permanent good of the whole people and not for the temporary benefit of individuals or companies. All the resources of the forest reserves are for use, and this must be brought about in a thoroughly prompt and businesslike manner, under such restrictions only as will insure the permanence of these resources. ***You will see to it that the water, wood, and forage of the reserves are conserved and wisely used for the benefit of the home builder first of all, upon whom depends the best permanent use of lands and resources alike. The continued prosperity of the agricultural, lumbering, mining, and livestock interests

is directly dependent upon a permanent and accessible supply of water, wood, and forage, as well as upon the present and future use of these resources under businesslike regulations enforced with promptness, effectiveness, and common sense. In the management of each reserve local questions will be decided upon local grounds, the dominant industry will be considered first, but with as little restriction to minor industries as may be possible; sudden changes in industrial conditions will be avoided by gradual adjustment after due notice, and where conflicting interests must be reconciled the question will always be decided from the standpoint of the greatest good of the greatest number in the long run."

Lands which are more valuable for agriculture than for forestry purposes have been excluded from the National Forests either by changes in the forest boundaries or by being opened to settlement and entry under the forest homestead act of June 11, 1906. The act of August 10, 1912, which directed that the national-forest lands be classified for the purpose of determining those which are chiefly valuable for agriculture, has resulted in practically all agricultural lands within the National Forests being listed for entry in the United States land offices.

Mineral deposits within National Forests, except such forests as were purchased under the act of March 1, 1911, are open to development exactly as on unreserved public land unless otherwise provided by special acts of Congress.

Management of Timber Resources of National Forests

Ripe standing timber on the forests, of which there is a large amount, is sold at a fair price. Anybody may purchase timber, but no one can obtain a monopoly of it or hold it for speculative purposes. The Government is anxious to sell the mature timber on the forests when it is no longer growing at a profitable rate and should give way to younger trees and seedlings which will constitute succeeding crops of timber. The fewest possible restrictions are imposed upon purchasers of timber, only such as will insure cut-over areas being left in the best condition for future growth. Experienced foresters estimate the quantity and quality of national-forest timber and its approximate value as a basis for the price to be charged. In fixing this all factors which affect the cost of lumbering, such as accessibility, number and kind of improvements necessary, as well as general market conditions, are taken into account. The prices set allow the purchaser of national-forest timber opportunity for a fair profit. Bids are then obtained through public advertisement, unless the amount is small enough to come within the limit which can be sold without advertisement. Information concerning attractive logging chances and the conditions of sale is gladly given inquirers, for the Forest Service wants the ripe timber used.

Before an extensive program of timber sales is started on any National Forest, forest officers make a careful survey of its timber resources and prepare a plan of management prescribing the area of timberland to be cut over each year and the methods and order of cutting. These long-time plans are made in order to insure a constant supply of timber for the communities and industries dependent upon the forest for raw material. This makes possible the establishment of permanent wood-using plants and prosperous communities of people who look to the woods as a market for their labor.

The trees to be cut on a sale area are marked in advance by a forest officer, the object being to leave enough of the younger trees to seed the ground and form the basis of a second crop of timber on the same land. This is merely applying the principles of practical forestry to make sure that there will always be timber on the National Forests to cut. Timber on the watersheds of streams is not cut to an extent that will impair the protective cover that the forest affords, because one of the chief objects of the National Forests is to regulate stream flow, nor is mature timber taken from recreational areas where it has a higher use for scenic purposes.

Small sales of timber are made by local forest officers without delay. Red-tape methods are not permitted in national-forest timber sales, big or little. Larger sales are made either by the supervisor of the forest, the regional forester, or the Chief of the Forest Service.

Homestead settlers and farmers may obtain national-forest timber for their own use at the actual cost of making the sale. No charge is made to them for the timber itself. This is one of the ways in which the National Forests are made to serve local residents.

Range Management on the National Forests

Along with the timber on the National Forests, particularly those in the West, there is a great deal of grazing land which is used every year by about 6,200,000 sheep and goats and 1,500,000 cattle, horses, and swine. If the 5,300,000 young of all kinds (which are not counted or charged for) are added, the total number of domestic animals which graze annually in the National Forests is about 13,000,000 of all ages.

Local settlers and stockmen are given first consideration in the use of the range, just as in the case of the other resources, and every man who grazes stock on the forest under permit is allotted a certain area for the grazing season. Unfair competition between the big man and the little man, which in the old days worked so much harm, is done away with. A good supply of forage year after year is insured by not allowing the land to be over-crowded with stock. Under regulation, overgrazed range is improved, instead of being further run down or denuded, as has been the case with many of the outside public lands.

Watershed Protection

The vegetation covering the mountain ranges of the country, many of which are within National Forests, exerts a great influence upon the regularity of water supply. The mountainous areas afford the main water supply for domestic use, for irrigation, and for the development of power. The future development of the entire country, therefore, will depend upon the amount of water and the manner in which it flows from the mountains. For this reason Congress made the preservation of conditions favorable to stream flow one of the principal objects in the establishment and administration of the National Forests.

A well-kept forest is the best of natural soil holders. Where there is no vegetation, particularly on steep slopes, there is nothing but the friction of the soil to keep water from following its habit of going downhill as fast as it can and carrying much of the soil with it. Forests and well-sodded pastures hold back more rain water and more soil on steep slopes than denuded woodlands or overgrazed ranges.

Along the streams within the National Forests are many sites suitable for power development. These are open to occupancy for such purposes and have the advantage of being on streams whose headwaters are protected. The Government does not permit the monopolization of power in any region or allow power sites to be held without prompt development.

Recreation in National Forests

To the camper, sportsman, and seeker after health, rest, and recreation, the National Forests offer unrivaled opportunities for outdoor life and enjoyment. The popularity of these great mountain playgrounds is evidenced by the fact that millions of people visit them each year. In recent years the number of visitors to the National Forests has annually exceeded 30,000,000. Roads and trails, marked by signs, make the forests reasonably accessible. There are countless secluded spots along the banks of streams and lakes where the camper may pitch his tent. Camping is free and generally requires no permit. In localities frequented by large numbers of people free public camp grounds are established and water developments, camp fireplaces, and comfort stations constructed for the convenience of visitors as fast as the funds available permit. The National Forests are the home of much of the country's big game, and there are many excellent trout streams and lakes, frequently restocked with young fish, which offer keen sport to the angler. In general, the only restrictions on hunting or fishing are those imposed by the fish and game laws of the states in which the forests are located, and all that is asked of the visitor is that he look to the proper sanitation of his camp and be careful with fire.

Permission to occupy national-forest land for residential, commercial, or industrial purposes not inimical to the protection and management of the forest may be secured under special-use permits ob-

tainable upon payment of moderate fees. Detailed information may be obtained upon application to either the supervisor or the regional forester.

Primitive Areas

Under the authority of a departmental regulation, the Forest Service has established a series of representative areas within the National Forests to be known as primitive areas. In these areas primitive conditions of environment, transportation, habitation, and subsistence will be maintained with a view to conserving permanently the value of such areas for purposes of public education and recreation. Within the primitive areas no occupancy under special-use permit is allowed, nor is the construction of permanent improvements by any public agency permitted, except as authorized by the Chief of the Forest Service or the Secretary of Agriculture. The Forest Service hopes, in maintaining these areas, to prevent the unnecessary elimination of impairment of unique natural values and to give the public opportunity to experience the conditions which existed in the pioneer phases of the Nation's development and to engage in the forms of outdoor recreation characteristic of that period, thus aiding to preserve national traditions, ideals, and characteristics and promoting a truer understanding of historical phases of national progress.

Wild Life on the National Forests

Closely related to the development of recreation facilities is the use of the National Forests as the habitat of fish and game. Wildlife adds materially to the enjoyment of the National Forests by the public, and the preservation of game animals, birds, and fish is a public duty. Game protection is one of the regular activities of the field officers of the Forest Service, and through the practice of scientific wildlife management the Forest Service seeks to develop and maintain the National Forest wildlife resources on a permanent basis. Cooperation with the state and local authorities in enforcing the game laws has contributed in no small degree toward making the National Forests more attractive to visitors and conserving one of their valuable resources.

Special acts of Congress have designated a number of national game refuges, situated wholly or in part within National Forests, for the protection of wild life.

Receipts from the National Forests

Receipts from the National Forests on account of timber sales, grazing fees, and special land uses and water power, etc., amount to several million dollars each year. Normally, receipts from timber

sales form the large part of the total, with receipts from use of forage a close second.

It could not be expected, of course, that rugged, inaccessible mountain lands, such as constitute by far the greater part of the National Forests, would soon yield a revenue to the Government over and above the cost of administration. Many of the forests may be expected to help supply the country's future needs for timber after the more accessible lands have been cut over, rather than its present needs, while others are chiefly valuable for watershed protection, which, though of the greatest importance to the people and industries of the country, does not yield the Government a return in dollars and cents. In the case of almost every forest, moreover, a great deal of money must be spent for roads, trails, bridges, telephone lines and other improvements before the resources can be used.

Since federal property is not taxable, of the total net receipts of the National Forests, 25 percent is turned over each year to the states to be apportioned for road and school purposes to the counties in which the National Forests are located. An additional 10 percent is used for road building on the National Forests, so that 35 percent in all of the receipts returns directly to the benefit of the local national-forest communities, while many of the expenditures by the Forest Service for national-forest protection and improvements also aid in local development.

National-Forest Improvements

To make the National Forests fully useful to the public, and also to facilitate their administration and protection as Government properties, it is necessary to equip them with various classes of improvements. Some of these are primarily for official use, as for example, fire lookout stations, ranger stations, and telephone lines. Incidentally, many of the improvements of this class are of material service to the public. Other improvements are purely for the benefit of specific forms of public use, as, for example, drift fences, stock-watering places, and public camp grounds. Still others, such as roads, trails, and stock driveways, are put in both to facilitate the task of administering and protecting the forests and to promote use and serve the interests of the public generally.

The Forest Service cooperates with state and county officials, good-roads organizations, and private individuals in the location, survey, construction, and maintenance of roads in the National Forests. The road and trail construction work is ordinarily financed from regular appropriations made by Congress but money has also been made available by allotments of emergency funds. These funds may be expended upon projects located within or partly within the National Forests. Through cooperative arrangement the highway projects which require the supervision of engineers intensively trained in highway engineering and

construction are handled by the Bureau of Public Roads. The improvement, repair, and maintenance of truck trails required primarily for administrative utilization and protective needs on the National Forests, together with the building and maintenance of foot and horse trails are handled directly by the Forest Service, and coordinated with fire control so far as possible so that construction crews may be available in remote areas of great fire hazard as part of the fire-suppression organization.

To June 30, 1935, the construction or improvement of 51,712 miles of roads and truck trails and 103,048 miles of trails had been made possible from direct forest road appropriations and other federal and cooperative funds apportioned to states. More than \$173,000,000 of federal funds has been spent on this work in the history of the Forest Service.

For the complete and economical use of the forage on the forests it is sometimes necessary to develop water supplies or to construct drift fences, bridges, trails, or other works. The Forest Service allots funds for their construction only when the benefit to the forest plainly warrants the expenditure. The use of funds for these purposes can often be made more effective if the assistance and cooperation of interested stockmen can be secured. Requests for cooperation should be addressed to the nearest forest officer.

Protection of the National Forests

Fire is an ever-present danger on the National Forests. The great size of the forests compared with the size of the patrolling force, the difficulty of reaching remote areas across miles of wilderness, the dry air and light rainfall in parts of the West, the prevalence of lightning in the mountains, and the constant use of fire in the daily life of the people and in the industries all combine to make the hazard exceptional. During 1934, 10,871 fires were fought by the Forest Service on 645,531 acres, within national-forest boundaries, causing damage amounting to \$2,149,600.

Among the chief causes of fire are smokers, incendiarism, debris burning, campers, lightning, railroads, and lumbering operations.

A small fire may spread into a conflagration, and fires, matches, and burning tobacco should be used as carefully in the forest as they are in the home. Carelessness in this respect may mean the loss of lives, homes, stock, and forage, and of a vast amount of timber which belongs equally to all citizens.

Fires may start in a remote region and reach vast proportions before a party of fire fighters can get to the scene, no matter how promptly the start is made. By far the best plan, therefore, is to prevent fires rather than to depend upon fighting them once they start. This subject has been given the most earnest attention by the Forest

Service. During the danger season the main attention of forest supervisors and rangers is devoted to preventing fires and to catching while still small those that do start. Extra men are employed, the forests are systematically patrolled, and a careful lookout is maintained from high points. Roads and trails are being built so that all parts of the forest may be quickly reached. Tools and food for fire fighters are stored at convenient places. The ranger stations and lookouts are connected with the offices of the supervisors by telephone, so that men may be quickly assembled to fight fires which the patrolmen can not subdue alone.

Many of the National Forests, particularly those of the West, in which fire danger is great and communication difficult, have been equipped with portable short-wave radio sets of a special type developed by the Forest Service. In emergencies, radio supplies means of communication with fire-fighting units after they have left the base station and are away from telephone communication, and enables the fire chief to keep in close touch with the progress of the fire and to make intelligent use of man power and equipment.

Weather observations are made regularly at numerous Forest Service stations, and forecasts of "forest-fire weather" are sent to forest officers so that when critical conditions are indicated special preparation can be made to meet them.

Precautions are taken by forest officers to protect the public health. All persons using national-forest lands are expected to properly dispose of their refuse, leave clean camp grounds, and refrain from polluting waters. They are liable to trespass proceedings if insanitary conditions result from their presence. Forest officers enforce compliance with regulations on the part of all campers, stockmen, permittees, and other persons traveling through or occupying national-forest lands.

Aggregate losses in the forests of the United States from insect damage are enormous. The principal forest insect pests are tree-bark beetles and defoliating insects. In the former class are the western-pine beetles, the mountain-pine beetles, the Black Hills-pine beetles, the Engelmann-spruce beetle, the southern-pine beetle, and the eastern-spruce beetle. In the second class are the gypsy moth, the spruce bud worm, and the larch sawfly. Forest fires are frequently followed by beetle outbreaks, because of the enfeebled condition of the trees, which lowers their powers of resistance.

Where insect attacks reach epidemic proportions on the National Forests, control measures are undertaken in cooperation with the Bureau of Entomology. Experimental work in insect control also is carried on in cooperation with this bureau.

Tremendous losses of timber and young growth are caused by tree diseases, such as the white pine blister rust. Some of the most destructive tree diseases have been imported from other countries on

planting stock, and efforts are now being made to combat those already imported and to prevent, by quarantine, the importation of new diseases. In its control work against tree diseases in the National Forests, the Forest Service is aided by the Division of Forest Pathology and the Division of Blister Rust Control in the Bureau of Plant Industry, Department of Agriculture. The Division of Forest Pathology maintains pathologists in several of the regional forest experiment stations of the Forest Service.

COOPERATION WITH THE STATES

There are in the United States 426 million acres of land owned by states and private individuals, the principal value of which is for growing forests. In order to bring about the protection of these lands from fire, and the replanting of the forests where they have been destroyed, the Federal Government offers financial aid to the states under the provisions of the Clarke-McNary law of 1924.

The number of states cooperating in fire protection is 39, and the total area of state and private land covered by this protection was, in 1934, approximately 237 million acres, about two-thirds of the total area in need of protection.

During 1934 the total area of forest land in the United States which was reported as having been burned over was 41,162,000 acres. By far the larger part of the area burned - over 37 million acres - was unprotected land.

The funds provided by the Federal Government for this work in the fiscal year ending July 1, 1936, were \$1,578,632, and state and private funds budgeted for the same period amounted to \$4,748,346. These projects are administered by the state forestry departments, with which the U. S. Forest Service cooperates in developing plans and inspecting the work. Under the terms of the law the Federal Government limits its expenditures in a given fiscal year to a sum not greater in each state than the funds expended by the state and private owners.

The Forest Service is also cooperating under the Clarke-McNary law with 40 states, in addition to Puerto Rico and Hawaii, in the production and distribution of forest planting stock for windbreaks, shelterbelts, and farm woodlands. A total of approximately 20 million trees is distributed each year in these projects.

Another form of assistance offered by the Government under the Clarke-McNary law is aid to farm woodland owners in the management and care of their timber. In this project the Department of Agriculture and the Forest Service are cooperating with 33 states and Puerto Rico. The work is focused particularly on the more efficient management of farm woodlands, the reforestation of those farm lands not now suitable for agricultural crops, and the marketing and utilization of farm timber. Approximately 127,000,000 acres of commercial forest land, or

about one-third of the privately owned commercial forest area of the country, is in farm woodlands.

Forest Conservation in the Lumber Industry

At the personal request of President Roosevelt, the lumber industry in its Code of Fair Competition for the Lumber and Timber Products Industries in 1933 included a forest conservation pledge to keep trees growing on its lands. Since the Code came to an end, the U. S. Forest Service has set up as a permanent activity a project to work with the states, lumbermen's associations, and timberland owners to the end that improved woods practices, as contemplated under the Code, will be continued. An effort is being made to aid private lumber interests to put an appreciable area of private forest lands under sustained yield management and to eliminate the old devastating "cut-out-and-get-out" methods of logging.

RESEARCH

Comparable in importance with the administration of the National Forests are the many investigative activities in field, laboratory, and office that are grouped under the heading of forest research. These investigations cover a wide range of subjects, including the growth, management, and protection of the forests, the management of livestock range within forest areas, and the conservative and effective utilization of forest products, as well as the economic features of forest ownership, production of lumber and other products, and the country's present and future need for timber.

All lines of forest research head up in Washington, D.C., but by far the greater part of the investigative work is conducted at twelve forest experiment stations in regional units that roughly correspond to the major forest regions of the country. These twelve experiment stations, with headquarters, are: the Northeastern Forest Experiment Station, New Haven, Conn.; the Allegheny Forest Experiment Station, Philadelphia, Pa.; the Appalachian Forest Experiment Station, Asheville, N. C.; the Central States Forest Experiment Station, Columbus, Ohio; the Lake States Forest Experiment Station, University Farm, St. Paul, Minn.; the Southern Forest Experiment Station, New Orleans, La.; the Southwestern Forest and Range Experiment Station, Tucson, Ariz.; the Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.; the Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.; the Intermountain Forest and Range Experiment Station, Ogden, Utah; the Pacific Northwest Forest Experiment Station, Portland, Ore.; the California Forest and Range Experiment Station, University of California, Berkeley, Calif. In each, so far as the needs of the region require, are represented the investigative activities relating to forest management and protection, forest products, forest economics, and range research.

Forest-Management and Protection Investigations

The purpose of research in forest management is to discover for the many varied and diverse forest types and forest soils the basic

facts upon which the proper management and protection of forest lands for the production of timber and related products can be established. Such research is intended to furnish the owner of timberland, whether farmer or lumberman, State or Federal Government, information wherewith forest lands can be brought to the point of producing the highest returns. The field is broad. Such diverse subjects are studied as seed production and germination, nursery and planting practice, and sprout and seedling growth. Intensive studies are made of thinning practice, of rate of growth of trees and stands at different ages, and of the various methods of harvesting the forest to obtain natural reproduction of desirable species. Closely associated with forest-management research is the endeavor to find more effective means of protecting the forests from fire and of suppressing the fires that start. Other important lines of investigation are the study of flood and erosion control by forestry measures and the climatic and recreational benefits which properly managed forests may provide. In short, forest-management research covers all phases of forest growth and forest protection, from the seed and bare land to the full-grown tree and the mature forest ready for harvesting for the use of mankind.

Forest Products

The bulk of the work on forest products is centered at the Forest Products Laboratory at Madison, Wis., maintained in cooperation with the University of Wisconsin. Here intensive studies are made of the physical, mechanical, and chemical properties of wood and wood products. These include tests of the strength of practically all North American woods of commercial importance, studies in seasoning and kiln drying, wood preservation, the manufacture of paper pulp, fiber board, and the like, and the production of alcohol, turpentine, rosin, tar, and other chemical products.

Forest Economics

Investigations in forest economics aim to furnish basic information as to the extent and economic importance of our forest resources, existing and probable future requirements for forest products, and the economic factors which govern the use of land for forestry and which affect methods of forest utilization under different conditions. Statistics are collected on the price of timber and other important forest products, and on the production and consumption of timber products by various industries. A comprehensive survey of the forest resources and requirements of the whole country is now in progress. Information is also collected on the forest resources and requirements of other countries because of their bearing on American forestry. Other studies cover such subjects as the effect of timber depletion on industrial and community development, the relation between forestry and agriculture in regions where there are considerable areas of marginal land, the costs of and returns from forestry enterprises, methods of forest taxation and their results, forest-fire insurance, and possible measures for promoting private forestry practice.

Range Research

The objective of range research is to determine, or aid in determining, how lands suitable for grazing can be utilized to the best advantage. It concerns itself primarily with increasing and maintaining the productivity of national-forest ranges, with promoting the welfare of a profitable range livestock industry, and with coordinating range and other forest uses. Under a wide diversity of conditions studies are conducted along fundamental lines, including the influence of herbaceous and shrubby range vegetation, and its use by livestock, on soil erosion, irrigation, domestic water supplies, floods, and the production of hydro-electric power; the correlation of grazing with satisfactory timber production; utilization of various forage species consistent with their proper maintenance and adequate reproduction; artificial reseeding to cultivated and native forage plants; the forage values, life histories, and requirements of range plants; range livestock management, including systems of handling different classes of stock, water development, and salting, and their relation to the welfare of the range; the relation of available water for range livestock to injury to timber reproduction; the relation of climate to plant growth and of plant succession to range management; and the eradication or control of poisonous plants.

Natural Areas and Experimental Forests and Ranges

Certain areas within National Forests are designated as "experimental forests," to be maintained permanently as outdoor laboratories for research in silvicultural and other forest practices in each forest region. A supplemental series of areas known as experimental ranges is set aside for range investigations. The Forest Service also has designated a series of "natural areas" to illustrate or typify virgin conditions of forest or range growth in various forest or range regions, to be retained in a virgin or unmodified condition for purposes of science, research, historical interest, and education. Within these various designated areas, no commercial use is allowed, and public use is carefully regulated. Use of the areas by other research or educational agencies for purposes which do not conflict with Forest Service projects is allowed under cooperative agreements.

EMERGENCY CONSERVATION WORK

Civilian Conservation Corps

On March 21, 1933, President Roosevelt asked Congress for legislation to help relieve distress, to rebuild men, and to accomplish constructive conservation work in our vast federal, state, and private forest and park properties. Congress enacted that legislation and on April 5 the President appointed a Director of Emergency Conservation Work.

Within five days 25,000 men were enrolled and the Civilian Conservation Corps was launched. By April 18, the first forest camp near

Luray, Va., in the George Washington National Forest, was occupied. In three months more than 300,000 men had been enrolled and were living in the forest camps all over the United States. By October 1, 1935, the national quota had been raised to 500,000 men, working in 2427 camps in every state in the Union and in Alaska and Puerto Rico (under the Forest Service) and in Hawaii and the Virgin Islands (under the National Park Service). Of these 2427 camps, 1752 were Department of Agriculture camps and 1123 of them were under the general supervision of the Forest Service. There were 567 National Forest, 346 state forest, and 210 private forest camps.

Four executive departments are collaborating in the Emergency Conservation Work program. The Department of Labor directs the enrollment of the men and the War Department transports, feeds, and clothes the men, and operates the camps. The work planning and supervision are carried on by the Departments of Agriculture and Interior.

All forestry projects of the Civilian Conservation Corps camps located on national, state, or private forest lands, are supervised by the Forest Service of the Department of Agriculture. The Forest Service plans the projects and supervises the execution of the work of these camps and provides the equipment. For camps on state and private forest lands, the supervision is through the state forestry departments.

The Civilian Conservation Corps program is two-fold: Restoring confidence and rebuilding manhood, and accomplishing these objectives through worthwhile conservation work. The most pressing and productive work is that which will help to protect, develop, and improve existing forests, prevent soil erosion and flood damage, and establish new and re-establish old forests. Our forest problem is a national one, restricted by neither artificial boundaries nor land ownership. The work has been done therefore where the need exists, on forest land in federal and state ownership or on private land when necessary in the public interest.

Specific accomplishments of the Civilian Conservation Corps on forest lands during the first two years included:

1. Protecting the forests against fire. This has involved the building of thousands of miles of telephone lines, the opening up of thousands of miles of fire breaks through forested areas, and the clearing of thousands of miles of roadsides and trailsides as a fire-prevention measure; the construction of many hundreds of lookout towers for fire detection; and the reduction of fire hazards on more than a million acres.

2. Control campaigns against rodent destruction (important on many western National Forests), and against losses caused by insects and tree and plant diseases, notably the gypsy moth, white pine blister rust and Dutch Elm disease. More than 20 million acres have been covered in this work.

3. Construction of many thousand miles of service roads and trails through timbered areas, principally for fire protection.

4. Forest stand improvement work completed over nearly 3 million acres.

5. Nearly 300 million trees planted, on denuded areas or eroding lands.

6. Improvement of national forest ranges through the revegetation of more than 40 thousand acres of range lands, the eradication of poisonous and other harmful plants from nearly 150 thousand acres, the construction of reservoirs and watering places for stock, and of thousands of miles of stock fence,

7. Improvement of 27 thousand acres of public camp grounds, the development of several thousand wells and springs and of many lakes, ponds, and beaches, as well as the construction of more than a thousand recreational dams. Of interest to recreationists and of importance to wild-life are the several thousand ponds for fish and birds constructed as a CCC project.

8. Soil erosion control by thousands of check dams built in gullies and by tree planting or revegetation of eroding areas.

Other work done by the Civilian Conservation Corps includes timber-estimating surveys on over 23 million acres; construction of more than 30 thousand foot, horse, vehicle, and stock bridges; erection of thousands of tool houses and boxes and other structures necessary to national forest administration and protection.

In addition to construction work, the CCC spent hundreds of thousands of man-days in maintenance work on telephone lines, fire breaks, and truck trails, and as organized fire suppression crews on the ground have been invaluable in fighting fire.

Civilian Conservation Corps enrollees receive a basic allowance of \$30 a month. From his pay, the average enrollee allots \$25 a month home to dependents. Five percent of the enrollees receive \$45 a month as leaders and eight percent receive \$36 a month as assistant leaders. In addition to the cash allowance, the enrollee is given wholesome food, is housed in comfortable quarters, and clothed suitably for the work he must perform. He receives expert medical care, supervised recreation, and the opportunity to improve himself through an educational program in every camp.

Men leaving a Civilian Conservation Corps camp have shown marked improvement physically and mentally and many have learned for the first time the meaning and satisfaction of useful work and besides have learned the great lesson of conservation. While employed in the camps the men were well cared for and their dependents were afforded a large measure of support.

Other Emergency Work Projects

Through the allotment of funds by the Public Works Administration, the Forest Service in 1933-35 contributed substantially to the relief of unemployment by providing useful work on the National Forests. Work projects included the construction of highways, roads, trails, bridges, dams, telephone lines, fire towers, and buildings. Improvement and development work carried on under P.W.A. allotments on the National Forests up to March, 1935, furnished more than three and one-half million man-days of work. At the peak of the program, more than 20,000 persons were on the employment rolls on National Forests in 36 states.

The Forest Service also has made large-scale contributions to unemployment relief in connection with the programs of other emergency agencies, including the Civil Works Administration, the Transient Relief Bureau, and the Federal Emergency Relief Administration. In December, 1933, the Civil Works Administration authorized the U. S. Forest Service to employ more than 31,000 unemployed and many others were employed in forestry work by states, counties, and municipalities. The Transient Relief Bureau has established a considerable number of camps on national and state forests. Many projects have been carried out on forest lands for the Federal Emergency Relief Administration.

THE PLAINS SHELTERBELT PROJECT

On July 11, 1934, President Roosevelt issued an executive order allocating emergency funds to the Forest Service of the U. S. Department of Agriculture to initiate the Plains Shelterbelt Project. This project will comprise the establishment and development of a series of shelterbelts and other tree planting in a protection forest zone, which extends, for the present, from the northern boundary of North Dakota in a general southerly direction into the Panhandle of Texas, a distance of about 1,000 miles. The zone is approximately 100 miles wide. The western boundary in general coincides with the western limit of a region in which past experience gives reasonable assurance of further success in tree planting.

A shelterbelt is a dense plantation of trees in a strip about 100 to 130 feet wide, so located as to provide protection from wind. In general, the shelterbelts of the protection forest zone are being planted at intervals of about one mile and consist usually of 10 to 20 rows or trees. There will be frequent breaks in the strips, however, and numerous variations in form, direction, and arrangement, in accordance with topography, soil, the direction of the prevailing winds, and the needs of the local conditions that are encountered.

The tree species selected for planting are for the most part the native trees of the western region, that have become adjusted to the climate and soils through many generations. In the case of every species except exotics, special stress is laid on the collection of seed within the region and the latitudinal zone in which the trees will

be planted. Government nurseries have been established, and will be developed to a capacity of about 200 million trees annually.

The need for stability of land tenure is preeminent in an undertaking of such permanency as is planned for the Shelterbelt Project. The entire project is based on the provision that the Government shall own or control the land on which the trees are planted, since under private control trees are seldom given the long-continued protection necessary to insure long life and satisfactory development. Another reason for Government ownership or control of the land in such a project, is that the entire undertaking should be a public improvement and not a subsidy to a certain proportion of the residents. Land may be acquired for shelterbelt planting by direct purchase, long-term lease, or cooperative agreement with the owner.

The shelterbelts will provide windbreaks, snow traps, and shade in a region where these are largely lacking. The Forest Service inaugurated this project in the belief that trees will mitigate the effects of future droughts, by preventing the quick drying and subsequent "blowing" of soils, similarly protecting growing crops from excessive drying, slightly modifying extremes of temperature in the same way that green fields cool the air, and through other local effects will modify their immediate environment and the living conditions for man, beast, bird, and vegetation.

The Plains Shelterbelt Project is expected to be only a beginning for more extensive tree-planting in the Plains region. It will undoubtedly stimulate further planting by the owners of land and by states.

Headquarters of the Director of the Shelterbelt Project are at Lincoln, Nebraska. The Lake States Forest Experiment Station of the U. S. Forest Service, at St. Paul, Minnesota, is furnishing technical supervision.

INFORMATION ON FORESTRY

The Forest Service places at the service of the public its fund of information about forestry, accumulated from its experiences of more than a third of a century of managing forest properties and from its investigations in the wide range of forest research throughout the country. It publishes its findings in helpful, practical bulletins, reports and statements. It also furnishes advice and cooperation by personal contact with its experts.

Timberland owners, farmers who have woodlands, other small owners and persons wishing information on tree planting for timber production, windbreaks, shelterbelts, control of erosion and the like are given such data as the Service has available, applicable to their special needs.

Information on such matters as the properties and uses of wood, wood seasoning, and preservative treatment, and methods of obtaining or utilizing forest products of any kind is obtainable from the Forest Products Laboratory, where investigations of this character are centered.

The Forest Service has a large collection of photographs showing forest conditions and illustrative of forest utilization and forest work generally in all parts of the United States. This collection is open to the public for inspection. Photographic prints, lantern slides, and forest maps are furnished for educational purposes, through loan or sale.

Material for use in visual education may be borrowed for short periods without cost except for transportation, by schools, libraries, clubs, and other institutions or organizations. This material consists of traveling exhibits, sets of lantern slides, film strips, and motion-picture films. Lists of this material are available upon request.

FOREST SERVICE ORGANIZATION

The administration of the National Forests and the conduct of all matters relating to forestry which have been charged to the Department of Agriculture by Congress are, under the direction of the Secretary of Agriculture, in the hands of the Chief of the Forest Service. The work of the Forest Service comes under the following main classifications: National Forest Administration, State and Private Forest Cooperation, and Research.

In order to prevent delays in the transaction of business in the administration of the National Forests, the country has been divided into ten National Forest regions with a regional forester in charge of each. Their respective headquarters are located as follows:

Region 1 - Northern region (Montana, northeastern Washington, northern Idaho, and northwestern South Dakota), Missoula, Mont.

Region 2 - Rocky Mountain region (Colorado, Wyoming, South Dakota, Nebraska, and Oklahoma), Denver, Colo.

Region 3 - Southwestern region (Arizona and New Mexico), Albuquerque, N. Mex.

Region 4 - Intermountain region (Utah, southern Idaho, western Wyoming, eastern and central Nevada,) Ogden, Utah.

Region 5 - California region (California and southwestern Nevada), San Francisco, Calif.

Region 6 - North Pacific region (Washington and Oregon), Portland, Ore.

Region 7 - Eastern region (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, and Kentucky), Washington, D. C.

Region 8 - Southern region (North Carolina, Tennessee, South Carolina, Georgia, Alabama, Mississippi, Florida, Arkansas, Louisiana, Texas, that portion of Oklahoma east of the Indian Meridian, and Puerto Rico) Atlanta, Ga.

Region 9 - North Central States region (Michigan, Wisconsin, Minnesota, North Dakota, Iowa, Missouri, Illinois, Indiana, and Ohio,) Milwaukee, Wis.

Region 10 - Alaska region, Juneau, Alaska.

The Plains Shelterbelt Project has its headquarters in Lincoln, Nebraska.

The work of forest research is carried on at the Forest Products Laboratory at Madison, Wisconsin, and at twelve regional experiment stations as follows:

Allegheny Forest Experiment Station,
Philadelphia, Pa.

Appalachian Forest Experiment Station,
Asheville, N. C.

California Forest and Range Experiment Station,
Berkeley, Calif.

Central States Forest Experiment Station,
Columbus, Ohio.

Intermountain Forest and Range Experiment Station,
Ogden, Utah.

Lake States Forest Experiment Station,
University Farm, St. Paul, Minn.

Northeastern Forest Experiment Station,
New Haven, Conn.

Northern Rocky Mountain Forest and Range Experiment Station,
Missoula, Mont.

Pacific Northwest Forest Experiment Station,
Portland, Ore.

Rocky Mountain Forest Experiment Station,
Fort Collins, Colo.

Southern Forest Experiment Station,
New Orleans, La.

Southwestern Forest and Range Experiment Station,
Tucson, Ariz.

National Forests are divided into ranger districts varying in size from 50,000 to 300,000 acres, with a forest ranger in charge of each. On districts where the work is heavy the ranger may be assisted by one or more assistant forest rangers, and forest guards are added temporarily for special or emergency work. In charge of the National Forest is the forest supervisor who is assisted by a staff which may include assistant supervisor, junior forester or junior range examiner, and clerks.

The group of National Forests in each National Forest region are under the direction of the regional forester. His staff generally consists of an associate regional forester and special technicians for each division, of the National Forest work. In all, the permanent force employed by the Forest Service numbers approximately 3,000. Of these, about two-thirds are employed on the National Forests as supervisors, assistant supervisors, rangers, etc., and the remainder are engaged in administrative, scientific, and clerical work at the Washington and regional headquarters, the Forest Products Laboratory, and the forest and range experiment stations. In addition, more than 3,000 forest guards are employed on the National Forests during the fire season each year.

INFORMATION REGARDING EMPLOYMENT IN THE FOREST SERVICE

Forest officers must have special qualifications to fit them for their work. Forestry is a scientific profession and those who are charged with the care and perpetuation of forests must have scientific training for the work. The administrative officers in charge of the National Forests hold positions of public trust involving heavy responsibilities. For the discharge of their duties they must possess qualities of honesty, courage, tactfulness and a high type of executive ability. In the selection of men to fill the subordinate positions, a high standard of qualification is required in order that they may be qualified to succeed through promotion to higher positions of trust and scientific accomplishment.

Most of the Forest Service personnel is in the field organization. The executive and technical positions in the Washington central office, and also in the regional offices, are filled by the promotion of members of the Forest Service who have demonstrated their capacity through long service in lower positions. The entrance field is the National Forests and experiment stations.

Positions on the National Forests

The force on the National Forests comprises a number of grades whose general relationships, as nearly as they can be shown schematically, are indicated in the following list. The salary ranges of the grades are likewise indicated:

Forest Supervisor (\$3800-\$5400)	
Assistant Forest Supervisor (\$3200-\$3800)	
Logging Engineer (\$3800-\$5400)	Chief Lumberman (\$3200-\$3800)
Associate Forester (\$3200-\$3800)	Associate Range Examiner (\$3200-\$3800)
Assistant Forester (\$2600-\$3200)	Assistant Range Examiner (\$2600-\$3200)
Junior Forester (\$2000-\$2600)	Junior Range Examiner (\$2000-\$2600)
Forest Ranger (\$2000-\$3200)	Forest Clerks (all grades) \$1440-\$2600)
Executive and Administrative Assistants (\$2600-\$3800)	
Field Assistant	Forest Guard

With the exception of field assistants and forest guards, the above positions are filled from the civil service lists or by promotion. Field assistants and forest guards are employed directly by the local regional officials, and this employment is for temporary periods, usually during the season of danger from fires, or when other special work requires additional men on the force. The appointment of forest guards is generally limited to local residents whose fitness is fully known, and who are thoroughly familiar with the region in which they will work.

Competitive civil service examinations are held periodically to establish lists of eligibles for appointment as junior foresters, junior range examiners, forest rangers (taken from the junior forester list), and forest and field clerks. The examinations are designed especially to qualify for work in the Forest Service and a limited number of other bureaus in the Government Service. In addition, stenographers and typists and lower grade clerks are selected from Civil Service registers.

Practically all members of the permanent force of the Forest Service enter through one of these examinations. All positions with greater responsibility are customarily filled by promotion from lower positions.

Further details regarding requirements for appointment, rates of compensations, and character of duties are given below for each of these positions separately.

Full information concerning the places and dates of examinations can be obtained upon application to the U. S. Civil Service Commission, Washington, D. C.

Forest Supervisor

The forest supervisor is in direct charge of and responsible for the efficient business management of his Forest and the sound technical handling of all its resources. He has a small staff of assistants, as well as his forest ranger force, and directs their work. This necessitates the capacity for successful leadership of men as well as executive ability. Good business judgment must be combined with adequate experience, training, and technical knowledge.

A forest supervisor must be able to maintain high standards of administration, to handle his work and funds economically, getting the best out of his men and avoiding wasteful expenditures, and to deal tactfully and successfully with the public, keeping in good business relations with large numbers of forest users, with local organizations, and with the community generally. He must also be able to make and execute plans that look far ahead, for the full development and future use of the resources of his Forest. A forest supervisor must understand and be able to apply the best practices, must know how to use technical helpers and how to judge their results, and must be qualified to use and to some extent participate in research as a means for discovering new and better ways of developing and utilizing the resources of which he is manager.

The supervisor is the real manager of a producing property. His managership involves not merely the handling of his Forest as a going business or success in dealing with the public but the difficult technical job of growing a crop of timber and developing the other forest

resources. This requires ability to correlate large masses of facts into plans that look decades ahead.

Compensation

The National Forests are grouped in two classes, according to the nature and size of the problems and responsibilities involved. The ranges of compensation paid to forest supervisors on forests of the two classes are as follows: Class 1, \$3,800 to \$4,600; Class 2, \$4,600 to \$5,400.

Method of Appointment

Examinations are not given for forest supervisor. Vacancies in the position are filled by the promotion of assistant forest supervisors, assistant foresters, or other employees who have entered by examination and proved their efficiency and fitness in lower grades.

Assistant Forester Supervisor

Assistant forest supervisors are usually general assistants to the forest supervisors in the administration of the National Forests, but are sometimes staff officers assigned to special technical or administrative duties. They must have the same qualifications as forest supervisors, who may delegate to them as much authority as they may deem advisable.

Compensation

The compensation paid to assistant forest supervisors is \$3,200 to \$3,800.

Method of Appointment

Examinations are not given for assistant forest supervisors. The position is filled by promotion from junior forester, assistant forester, or forest ranger.

Forest Rangers

A district forest ranger is primarily a field man who is in charge of a ranger district of from 50,000 to 300,000 acres, and is responsible under the forest supervisor for its protection and management. The work calls for considerable travel, and the ranger must expect to spend much of his time away from home.

Senior forest rangers are in charge of project work, timber-sales work, and other work as assigned.

Compensation

The range of pay of a district forest ranger is from \$2,300 to \$3,200 a year; that of senior forest ranger is from \$2,000 to \$2,600 a year.

Method of Appointment

The ranger position is filled through competitive civil service examination. The forest ranger examination has not been given for several years, however, and none is contemplated for the immediate future. These positions are at present filled from eligibles certified by the Civil Service Commission from the junior forester and junior range examiner registers.

Associate Forester - Assistant Forester

The duties of associate and assistant foresters include the examination and mapping of forest areas, reports on applications for the purchase of timber, marking, scaling, managing timber sales, surveying national forest boundaries and summer-home sites, nursery work, and forest planting. They are technical advisers to the forest supervisors and participate in the handling of the timber resources and the preparation of plans for the development and growing of forest crops.

Compensation

The range of salaries in the position of associate forester is from \$3,200 to \$3,800, and of assistant forester from \$2,600 to \$3,200 a year.

Method of Appointment

Examinations are not given for associate and assistant forester. Vacancies in the associate forester positions are filled by promotion of assistant foresters who have proved their fitness for advancement, and the assistant forester position by promotion of junior foresters qualified for higher duties.

Junior Forester

Men having the requisite qualifications are employed as junior foresters for assignment to forest experiment stations, forest-products research, to serve as assistant district rangers, or to fill other specialized positions for which qualified men already in the organization are not available.

Compensation

The range of pay of junior foresters is from \$2,000 to \$2,600 a year.

Method of Appointment

Junior foresters are appointed from a register of eligibles obtained through competitive civil service examinations which test their qualifications in education and knowledge of technical forestry. Only those between the ages of 21 and 35 are admitted to the examination. For admission to this examination the applicant is required to show graduation from a four-year course in a forest school of recognized standing or in the forestry department of a college or university of recognized standing, or equivalent training and experience. The examination is held annually.

Logging Engineer - Chief Lumberman

Logging engineers must be men of exceptionally high qualifications involving knowledge and experience in logging engineering, lumber markets and prices, and other technical and business features of the lumbering industry. They devise plans for the most effective disposition of National Forest timber by sales and make stumpage appraisals for large transactions.

Chief lumbermen must have had thorough training in cruising, logging, scaling, and milling. They assist local forest officers in the conduct of timber sales as well as in reporting on tracts of timber where sale has been applied for or is advisable.

Compensation

The range of compensation for logging engineers is from \$3,800 to \$5,400, according to the degree of responsibility involved.

Chief lumbermen receive salaries of from \$3,200 to \$3,800 a year.

Method of Appointment

These positions are filled by the promotion of men in the Service who have developed capacity for such work. Only when men possessing the necessary ability and experience are not available in the organization are competitive examinations held.

Associate Range Examiner - Assistant Range Examiner

The duties of associate and assistant range examiners require knowledge and experience in dealing with range problems and involve supervisory functions in forest-range investigations and administration.

Compensation

The range of pay in the position of associate range examiner is from \$3,200 to \$3,800 a year, and in the assistant range examiner grade from \$2,600 to \$3,200 a year.

Method of Appointment

These positions are not filled by examinations. Vacancies in the associate range examiner position are filled by the promotion of men in the assistant grade who have proved their fitness for advancement, and in the latter grade by the promotion of junior range examiners qualified for higher duties.

Junior Range Examiner

Men having the requisite qualifications are employed as junior range examiners for assignment to range investigations, to take charge of range surveys, to serve as assistant to a district ranger, or fill other specialized positions in the forest-range work for which qualified men in the organization are not available.

Compensation

The range of pay of junior range examiners is from \$2,000 to \$2,600 a year.

Method of Appointment

Junior range examiners are appointed from eligibles obtained through competitive examination which tests their knowledge of plant physiology and ecology, and of range management and surveying. Only men between the ages of 21 and 35 are admitted to the examination. For admission the applicant is required to show that he has been graduated from a college or university of recognized standing, with at least one year's work in plant physiology, systematic and economic range botany, and plant ecology combined, or equivalent training. The examination is held annually, usually in March.

Forest Guard - Field Assistant

In addition to the permanent classified force, temporary assistants are employed during the season of serious danger from fires, or when other special work requires additions to the regular forest force. Persons thus employed are known as forest guards and field assistants, and serve only as long as required.

No examination is required in the position of forest guard, but guards may be called upon to perform work similar to that of rangers. Applications for employment as forest guard must be made to the forest supervisor or district ranger. Sobriety, industry, physical ability

and effectiveness will be required, and preference will be given to local residents whose fitness is fully known, and who are thoroughly familiar with the region in which they will work.

Field assistants are employed in reconnaissance parties. Examination is not required, but some knowledge of forestry is essential and the number of such positions being limited the choice in practice is restricted to college students taking forestry courses. The opportunity for obtaining summer work on the National Forests during vacations by young men who are not students of forestry is small. Many more applications are received for summer work than there are jobs, and forest officers have found it necessary to limit employment of the kind to students of forestry who are recommended by the forest schools as standing highest in their classes.

Boys of high-school age can seldom be employed to advantage in National Forest Work. Earlier in the history of the Forest Service, when lands were being examined for inclusion in the forests, high-school boys were employed as routine assistants in surveying parties during vacation, but this opportunity has now to a large extent disappeared. There was also some employment of boys of this age to fill out technical parties in the field when trained foresters were not available. The serious disadvantage was found that many of them not only could not stand up under the work but required so much care and attention from the older men that these men could not do their own work as satisfactorily as was required.

Forest Clerk

The chief clerks in the offices of the forest supervisors are of four grades. The duties of clerks in the senior and principal clerk and administrative assistant grades are those of minor executives possessing the experience and ability qualifying them for the management of the clerical and routine headquarters work of the most important Forests in order that the forest supervisor may devote himself to field activities. The employee must be able to handle routine matters with rangers and other forest officers under the general direction of the supervisors, prepare the usual reports, keep the financial and property record, have full executive responsibility for the work of all clerical subordinates, handle correspondence on minor matters with persons outside of the Service, and deal effectively with forest users. Qualifications as bookkeeper and typist are essential; stenography, while desirable, is not essential. Only men are employed in these grades.

Compensation

Clerical employees who have the full responsibility of executive assistants receive salaries ranging from \$2,000 to \$2,600 a year, except that in certain positions of special importance with respect to the volume and responsibility of the work handled the title of principal clerk or of administrative assistant is used and the ranges of

pay are \$2,300 - \$2,900 and \$2,600 - \$3,800 a year, respectively. Salaries in the lower grade of chief clerk range from \$1,800 to \$2,600 a year. Subordinate clerks are paid from \$1,440 to \$1,980 a year according to the ability and experience required and the degree of responsibility involved.

Method of Appointment

Administrative assistant and principal forest clerk positions are filled by promotion from the forest clerk grade of employees who have shown that they have the requisite qualifications for the higher grades. Training in accountancy is given weight in making such promotions.

The forest clerks are recruited through competitive civil-service examinations which are given in the various civil service field districts when necessary to renew the register of eligibles. The age limit is 18 to 50 years. The examination tests the qualifications of applicants in bookkeeping, arithmetic, and typing. For admission applicants must have had at least three years' responsible experience in general office work, which may or may not include stenography, except that one year of acceptable experience in the Forest Service as clerk or ranger may be substituted for two years of outside experience. Subordinate clerks are appointed from the regular clerical registers of the Civil Service Commission.

General Information

Terms of Service

The important requirements which a new member accepts when he enters the Service are:

1. With a few exceptions, administrative and technical positions involve travel and require absence from home for a considerable portion of the year.
2. Each member of the Service under permanent appointment, who travels on the forests, must provide himself with a Forest Service uniform of the approved type and will be expected to wear it when the use of the uniform is desirable for the work in hand.
3. Technical men who wish to advance to positions of administrative responsibility should acquire experience enabling them to qualify for employment as district ranger. A year or more of successful work as a district ranger ordinarily precedes the advancement of a technically-trained man to a position as assistant to the supervisor, or to work as a specialist.
4. While transfers after the first few years of service are avoided so far as possible because of the personal and official inconvenience they entail, it is nevertheless necessary at times to transfer employees to new locations, and though every reasonable con-

sideration is given to personal reasons for not wishing to move, every member of the organization must expect to transfer if Service interests will be served thereby. Frequent transfers in the first years of service are often of advantage to an employee.

5. Whenever it is to the advantage of the Government to do so, forest officers may in the discretion of the supervisor be required to furnish the horse or motor equipment needed for the transportation of themselves and their personal equipment over the unit with which they are connected. Forest rangers are required to furnish their own saddle horses, as well as field and camp equipment. The Government pays for the forage and any necessary stabling facilities. A mileage allowance not exceeding five cents a mile is authorized for personally-owned cars used in necessary official travel.

6. Dwellings are not furnished by the Government for the occupancy of employees except when there is an undeniable need for them and when it is impracticable for the employee to rent his own living quarters. When quarters are furnished deduction is made from the basic salary of the employee at the following rates: Ordinary quarters in isolated places, \$120 per annum; quarters in town large enough to support a doctor, dentist, and high school and church facilities, \$240 per annum; quarters of the single-room or bunk-house type, \$60 per annum.

7. Rules of conduct are prescribed which are binding upon all employees. Forest officers are representatives of the Federal Government and as such their acts as private individuals are particularly open to criticism and may reflect on the Service. Consequently, they must set and hold to a high standard of personal conduct and integrity that will safeguard the Service against criticism and embarrassment.

8. While employees retain the right to vote as they please and to express privately their opinion on political subjects, any active part in political management or in political campaigns is prohibited by the civil-service rules.

9. Appointees must report for duty wherever assigned, at their own expense.

Schools of Forestry

There is no Government school of forestry, but in order to answer numerous inquiries received the Forest Service has prepared a list of forestry schools. A copy of this list is enclosed with this circular when the letter answered contains a request for such information. The Forest Service has no connection with any of these courses, and as a Government bureau is not in a position to express an opinion as to their relative merits. Full information concerning entrance requirements, tuition, etc., can be obtained by applying directly to the respective institutions.

Correspondence Schools

Advertisements of correspondence schools which purport to prepare young men for range work and practically guarantee Government employment upon completion of their courses have come to the attention of the Forest Service. Many of the statements in these advertisements are misleading and in some cases absolutely false. They frequently convey the impression that the forest ranger has largely a play-time job, while in fact it is permanent, involves considerable responsibility, and requires arduous work often under difficult conditions.

No institution is authorized to guarantee employment after its course is completed. All permanent positions are under civil service and attaining a passing mark depends largely upon experience, which no school can give by correspondence. In addition to all this, if the applicant passes an examination there is no certainty that a vacancy will occur. In ordinary circumstances correspondence schools have little value in furnishing preparation for such technical work and few of the men who take the courses pass the examination. The knowledge a man must have to answer the practical questions comes mostly from actual experience in the woods and on the range. On the other hand, in the colleges and universities which give forestry courses at the institutions themselves, the instruction is given by men who are properly qualified by experience in actual forest work, and at some institutions with practical demonstration in the woods.

Work Without Pay, or for Board and Lodging, to Learn the Business

Frequent inquiries are received stating that the writer would be glad to work without wages or for his keep, as an "understudy" to a ranger or other official. There is no provision by which such an arrangement may be made, as it would be contrary to law except in a few special cases.

Employment of Women

Outdoor employment in the Forest Service is necessarily limited to men, the actual conditions in field work on the National Forests being such as to make the employment of women impracticable from the standpoint both of the employee and of the Service itself. The only exceptions to this rule in the past, of which there has been some newspaper mention, occurred in remote mountain regions in the West, where in a few instances women living in the immediate region and familiar with the country were employed during the season of fire danger to serve at lookout stations when men were not available. This would not have been desirable if men had been available, for even during the fire season there are intervals when there is little fire danger and the lookout is required to do manual labor on roads and trails, on construction work, in packing up to the lookout station his own subsis-

tence supplies, and the like, which a woman is not physically able to do.

Women are employed in the offices of the Forest Service as clerks, stenographers, typists, editors, draftsmen, artists, etc., at basic salaries ranging from \$1,260 to \$2,600 a year. All these positions are in the classified civil service and when vacancies occur they can be filled only from eligibles certified by the Civil Service Commission after competitive examination. Full information concerning the places and dates of examination can be obtained upon application to the Civil Service Commission, Washington, D. C.

Preference to Ex-Service Men

The age limits in examinations do not apply to applicants showing honorable discharge from the military or naval service. In addition five points are added to the rating actually made in the examinations for service with honorable discharge, or ten points if the applicant was disabled while in the service.

(Revised, November 1935)

THE UNIVERSITY OF CHICAGO PRESS

THE UNIVERSITY OF CHICAGO PRESS
1207 EAST 59TH STREET
CHICAGO, ILL. 60637
U.S.A.
LONDON: ROUTLEDGE Kegan Paul
27, AVONDALE AVENUE
LONDON, N.W.11 2AB
ENGLAND
PRINTED IN GREAT BRITAIN
BY THE UNIVERSITY PRESS, CAMBRIDGE

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